## II. SPECIFICATION AMENDMENTS

Please replace the paragraph beginning on page 2, line 21 through page 3, line 7 as rewritten below:

In accordance with one embodiment, an apparatus for forming a twisted pair cable has a device for rotating at a first predetermined rate of rotation a pair of elongated conductor strands about a twisting location, the device guiding the elongated conductor strands to the twisting location. The strands, after leaving the twisting location, enter a twist stop device mounted adjacent the twisting location and the twist stop device grips the running lengths of elongated conductor strands passing through the device for rotating and the twisting location. A strand puller engages the running lengths of elongated conductor strands after passing through the twist stop and advances the strands passing through the device for rotating, and the twist stop device, the strand puller operating at a second predetermined rate of rotation. The device for rotation and the strand puller ~~operating~~operate independently to make a twisted pair cable having different twist rates on different segments, the segments having different lengths.

Please replace the paragraphs beginning on page 7, line 22 through page 8, line 29 as rewritten below:

One embodiment of a twist stop device 72 is disclosed in FIG. 5. The purpose of the twist stop device 72 is to stop the rotation of the resulting cable, at the twisting location, which is formed by the rotating conductors from the rotating frame 20. A pair of conductor guides ~~90,~~ 92, 94 in the rotating frame 20 shown in FIG. 1 insure that the twisting action takes place at the twist

stop device 72. The pair of conductors 16, 18 are shown being twisted by the rotating frame 20 of FIG. 1 and entering into a funnel shaped cavity 74 in FIG. 5 which guides the twisting conductors through an exit 78 of this cavity 74 and into a vertical channel 80. Inside the channel 80 is located, for example, a pair of pinch rollers 82, 84 having, for example, rubbery coated surfaces (not shown) that grip the twisted cable 26 therein and prevent the cable 26 from further rotation after the twist is placed thereon. The strand puller advances the cable 26 from the channel 80 at a predetermined rate that may be measured as so many inches per second. This rate being provided by the controller 24 to the strand puller drive motor 32 of FIG. 1.

Still referring to FIG. 1, the controller 24 is connected to the twisting drive motor 22 of the rotating frame 20 to set the rotation rate of the rotating frame 20 by providing appropriate signals thereto. The higher the rate of rotation of the rotating frame 20, the more twists per inch are placed on the twisted pair cable 26, normally. This clearly depends on the rate of take-up of the strand puller 30. The twisted pair cable strand puller 30 receives and coils the twisted pair cable 26 thereon and is driven by the puller drive motor 32 connected also to the controller 24. The controller 24 provides appropriate signals to both the twisting drive motor 22 of the rotating frame 20 and the puller drive motor 32 of the strand puller. Preferably, the controller 24 includes a programmable computer having information stored therein which is used to control both the drive motors 22, ~~24~~32 according to a desired end product, i.e., the twisted pair cable having a defined twist rate thereon at each point. The type of information stored therein is further disclosed below.

Please replace the paragraphs beginning on page 9, line 29 through page 12, line 18 as rewritten below:

FIG. 2 is a generalized graph of different twist rate algorithms. The horizontal axis 34, the x-axis, represents the distance from the starting point of a cable 60, shown in FIG. 4, for example. The cable 60 may have numerous segments over its length starting with segments S1, S2 and S3. The vertical axis 36, the y-axis, represents the twist rate in the cable in "~~twists~~turns per inch," the higher twist rate located near the origin. The dashed curves on the graph represent average twist rates at a given point in a cable length. The line 42 which may be a mathematical formula, for example, represents a linear change in the twist rate over the length of the cable. The line 44 represents an increasing twist rate from the start to the end of the cable, and line 46 represents the twist rate increasing to a given point 50 and then decreasing such as would be provided by the first section of a sine curve. It is clear that many other algorithms may be selected to change the twist rate on the cable as it is being manufactured by the present invention and even one not represented by a mathematical formula is allowed.

Still referring to FIG. 2, the cable ~~68~~26, only partially shown in FIG. 5 as cable 78, has a twist rate of T1 over segment S1, a twist rate of T2 over segment S2, and a twist rate of T3 over a segment S3. The twist rates are decreasing over each segment. It is further seen that the machine 10 is not able to instantaneously change the twist rate from segment to segment and thus a step segment 100 being a continuously changing twist rate will exist between segments S1 and S2. The cable ~~68~~26 of FIG. 1 is thus a combination of segments having, alternating, fixed twist rates and continuously changing twist rates segments. The

length of each lengthwise segment being programmed into the controller 24 as well as other parameters necessary to generate the cable ~~68~~26 of FIG. 1. A graphical illustration cable 102 in FIG. 2 is illustrated having increasing twist rates over several segments and a decreasing twist rate at the end. Because of the physical limitation of twisting elongated conductors and the controller being able to change twist rates and segment lengths, a cable may appear to have a continuously changing twist rate where, for example, the segments are very short, on the order of inches to feet, and the twist rate is changed only slightly from one segment to another.

To further understand the operation of the variable twist rate apparatus 10, reference is made to FIG. 3 which represents by graph how the twisting drive motor 22 which turns the rotating frame 20 at a first predetermined rate, twists per second, each twist representing one rotation of the frame 20, relates to the strand puller rate, inches per second, for example, of the puller drive motor 32. As seen in FIG. 3, the horizontal axis 38 represents the take-up rate and is divided into units of inches per second. The vertical axis 40 represents the actual twist rate, twists per inch, on a cable at a particular distance obtained from FIG. 1. The lines represented thereon reflect different rotation rates of the frame 20. For example, line 52 represents a rotation rate of one twist per second of the frame 20 with a changing take-up speed reflected. Although, line 54 is limited as to the twist rate, the computer directing the controller 24 of FIG. 1 may be programmed to jump to different lines and follow different algorithms such as shown in FIG. 2. Line 54 represents a twist rate of 6 twists per second and line 56 represents 12 twists per second. These numbers only being illustrative for the purpose of explaining the present invention.

Thus, one is able to select an instantaneous twist rate from FIG. 2 according to the line selected. This twist rate is then found on the vertical axis 40 of FIG. 3 and from there one is able to obtain the settings for the rotating frame 20, the desired twist rate per second, and the speed of the strand puller 30 in inches per second. Thus a cable having 4 twists per inch may be generated by having a twisting drive rate of 6 twists per second and a strand puller rate of 1.5 inches per second (4 twists per inch = 6 twists per second / 1.5 inches per second).

FIG. 4 illustrates a pair of twisted conductors 62, 64 formed in accordance with the present invention. Over a segment having a predetermined distance, the twist rate of the pair of conductors 62, 64 changes from a relatively high twist rate at point 66 (segment S1 with a twist rate of T1), to a relatively medium twist rate at point ~~68~~65 (segment S2 with a twist rate of T2) and to a relatively low twist rate at point 70 (segment S3 with a twist rate of T3).